

Amend claim 16 as follows:

c4 --16. (amended) An electrode structure of a carrier substrate of a semiconductor device for solder-bonding the semiconductor device to a main substrate, comprising:

a recess formed in a central area of the electrode structure;

a circumferential wall surface surrounding said recess of said central area and entirely within said recess; and

a through portion passing through said circumferential wall surface and connecting between an inside portion of said recess and an outer portion of said circumferential wall surface.--

R E M A R K S

Claims 1-18 are present in the application. Claims 1-6 and 8-18 are rejected as being anticipated by WANG 5,962,922.

Reconsideration and withdrawal of the rejection are respectfully requested because the reference does not disclose or suggest that an entirety of the circumferential wall of the soldering land is within the recess in the substrate, and that a passage is through an outer portion of the circumferential wall, as recited in claim 1 of the present application.

By way of example, Figures 1a and 1c of the present application show a carrier substrate 102 having a recess therein. Soldering land 103 is in the recess. The soldering land 103 comprises a circumferential wall extending from the top surface

of the carrier substrate into the recess and a flange portion extending horizontally on the substrate surface. A slit 104 is through both the circumferential wall as seen in Figure 1c and through the flange as seen in Figure 1a.

In contrast, as seen in Figures 2 and 3c of WANG and as disclosed at column 2, lines 13-28, for example, a cavity 26 is recessed into the substrate 10. The recess cavity 26 is coated with conducting material 262 (to form a circumferential wall) and continues to form a rim 264 at the surface of the substrate. Cuts 266 are provided only in the rim 264 to let air out during soldering. Accordingly, the circumferential wall part of the conducting material 262, defined as being entirely within the recess, does not contain a cutout. WANG does not disclose or suggest that the cut or passage is through an outer portion of the circumferential wall, as recited in claim 1 of the present application.

Claim 8 recites that a wall of the soldering land defines an interior hollow portion and is entirely within the recess, and that a flange extends from the upper edge of the wall and that at least one slit is through the wall and the flange providing a passage through the wall and the flange. The comments above regarding claim 1 are equally applicable to claim 8.

Claim 12 recites a cup-shaped soldering land disposed in a recess, a wall of the soldering land defining an interior hollow portion; claim 12 further recites that the wall is

entirely within the recess and at least one slit through the wall extends from an upper edge of the wall and provides a passage through the wall. The comments above regarding claim 1 are also equally applicable to claim 12.

Claim 16 recites a circumferential wall surface surrounding a recess in a central area and entirely within the recess and a through portion passing through the circumferential wall and connecting between an inside portion of the recess and an outer portion of the circumferential wall surface. The comments above regarding claim 1 are also equally applicable to claim 16.

As the reference clearly does not disclose that which is recited, the anticipation rejection is not viable. Accordingly, reconsideration and allowance of claims 1, 8, 12, and 16 are respectfully requested.

Claims 2-6, 9-11, 13-15, 17, and 18 depend from claims 1, 8, 12 and 16, respectively, and further define the invention. For the reasons set forth above regarding claims 1, 8, 12 and 16, claims 2-6, 9-11, 13-15, 17, and 18 are also believed patentable over the cited prior art.

In addition, regarding claim 18, the Official Action states that WANG discloses a through portion 12 which is at least one slit in the flange portion and said slit extends from the flange portion to a position adjacent a bottom of the cylindrical circumferential wall surface. However, Figures 2-5 of WANG show a through hole 12 adjacent to the cut 266. The through hole 12

is connected to the conducting material 262 through soldering pad 126. Figures 2-5 and the accompanying text do not disclose or suggest that the cut 266 connects the cavity of the conducting material with the through hole.

Figures 6-12 of WANG show the through hole 12 through the center of cavity 36. However, the cuts 366 do not extend as far as the through hole, as seen in Figure 7b, for example. As noted above, the purpose of the cuts of WANG are to let out air during soldering. As disclosed at page 9, line 26 through page 10, line 23 of the present application, not only is air removed from inside the hollow portions via the slits, but the joint area between the soldering land and the solder is increased because the solder invades the inside of the soldering land.

Claim 7 is rejected as being unpatentable over WANG in view of LAU (Chip Scale Package), 1999. This rejection is respectfully traversed.

LAU is cited for the teaching of a chip scale package.

LAU does not teach or suggest what is recited in claim 1 of the present application. As noted above, WANG does not disclose or suggest what is recited in claim 1. Since claim 7 depends from claim 1 and further defines the invention, the combination of references would not render obvious claim 7.

In view of the present amendment and the foregoing remarks, therefore, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

MIZUSAKI S.N. 09/847,370

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,

YOUNG & THOMPSON

By Liam McDowell
Liam McDowell
Attorney for Applicant
Registration No. 44,231
745 South 23rd Street
Arlington, VA 22202
Telephone: 703/521-2297

October 7, 2002

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 1 was amended as follows:

--1. (twice amended) An electrode structure of a carrier substrate of a semiconductor device for solder-bonding the semiconductor device to a main substrate, said electrode structure comprising:

a carrier substrate having a recess in a central area of a surface thereof;

a soldering land of the electrode structure arranged in the recess, said soldering land having a circumferential wall defining a hollow portion extending from said surface, said circumferential wall being entirely within said recess; and

a passage through an outer portion of said circumferential wall.--

Claim 8 was amended as follows:

--8. (amended) An electrode structure comprising:

a carrier substrate having a recess disposed on a surface thereof;

a soldering land disposed in the recess, a wall of the soldering land defining an interior hollow portion and being entirely within the recess, a flange extending from an upper edge of the wall; and

at least one slit through the wall and said flange providing a passage through the wall and the flange.--

Claim 12 was amended as follows:

--12. (amended) An electrode structure comprising:
a carrier substrate having a recess disposed on a surface thereof;

a cup-shaped soldering land disposed in said recess, a wall of the soldering land defining an interior hollow portion, said wall being entirely within said recess; and

at least one slit through the wall extending from an upper edge of the wall and providing a passage through the wall.--

Claim 16 was amended as follows:

--16. (amended) An electrode structure of a carrier substrate of a semiconductor device for solder-bonding the semiconductor device to a main substrate, comprising:

a recess formed in a central area of the electrode structure;

a circumferential wall surface surrounding said recess of said central area and entirely within said recess; and

a through portion passing through said circumferential wall surface and connecting between an inside portion of said recess and an outer portion of said circumferential wall surface.--